



SHELL E&P

MOFFAT COUNTY, CO

NORTH CASTOR GULCH 2-16

NORTH CASTOR GULCH 2-16

NORTH CASTOR GULCH 2-16

Plan: PLAN 4

Standard Planning Report

24 September, 2012



Weatherford®



Project: MOFFAT COUNTY, CO
Site: NORTH CASTOR GULCH 2-16
Well: NORTH CASTOR GULCH 2-16
Wellbore: NORTH CASTOR GULCH 2-16
Design: PLAN 4
Latitude: 40° 23' 31.560 N
Longitude: 107° 36' 20.370 W
GL: 6987.00
KB: KB @ 7003.00ft



Weatherford®

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
START OF PRODUCTION - NCG 2-16	4830.92	393.59	-841.27	40° 23' 35.449 N	107° 36' 31.243 W	Point
PBHL - NORTH CASTOR GULCH 2-16	5293.00	-4057.28	-3531.30	40° 22' 51.463 N	107° 37' 6.002 W	Point
LP - NCG 2-16	5395.00	-204.33	-1436.65	40° 23' 29.540 N	107° 36' 38.938 W	Point

WELL DETAILS: NORTH CASTOR GULCH 2-16

+N/-S	+E/-W	Northing	Easting	Ground Level:	Latitude	Longitude	Slot
0.00	0.00	1392645.78	2413539.13	6987.00	40° 23' 31.560 N	107° 36' 20.370 W	

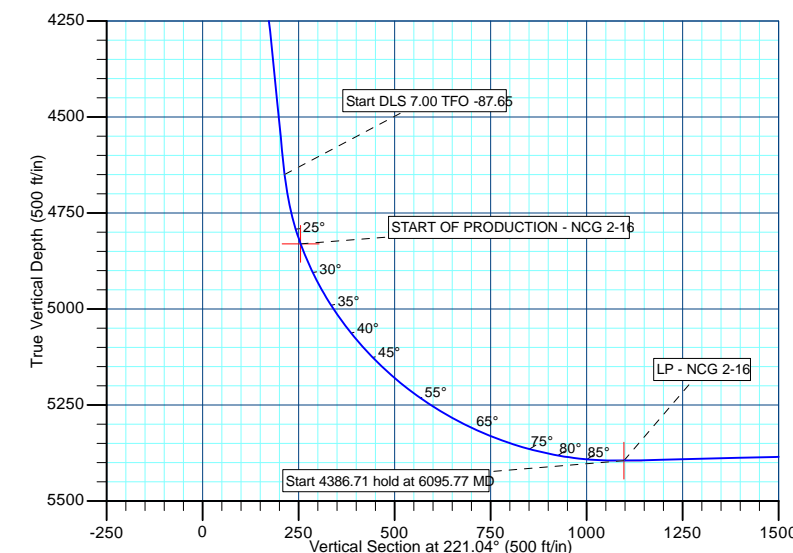
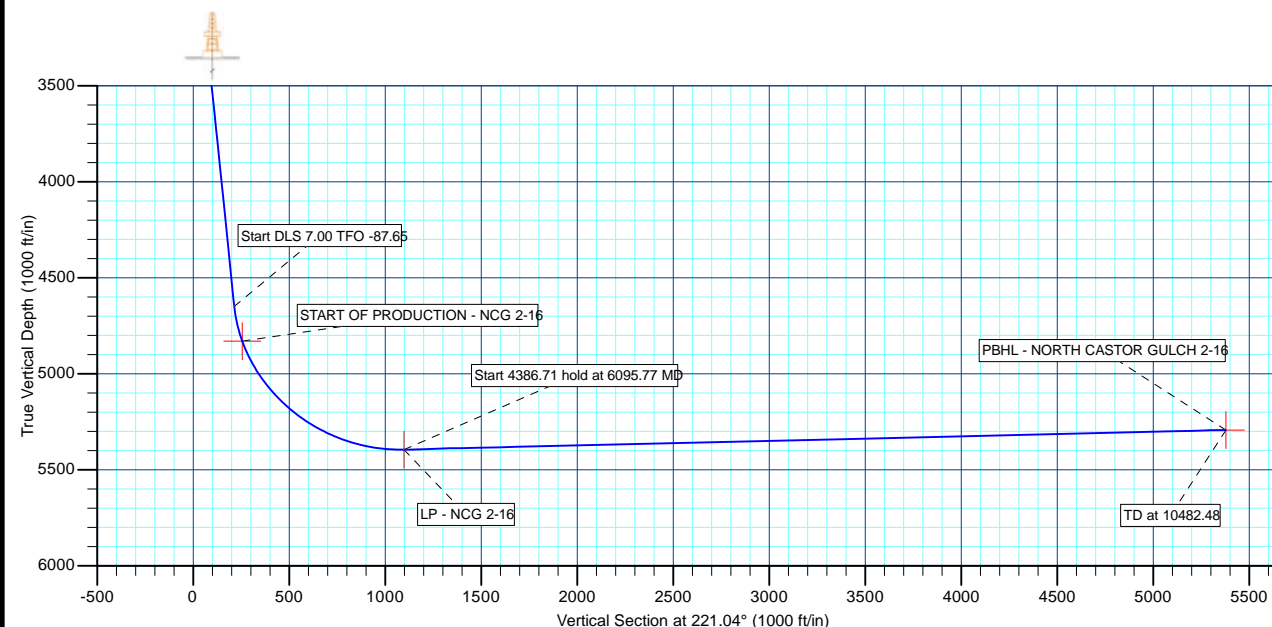
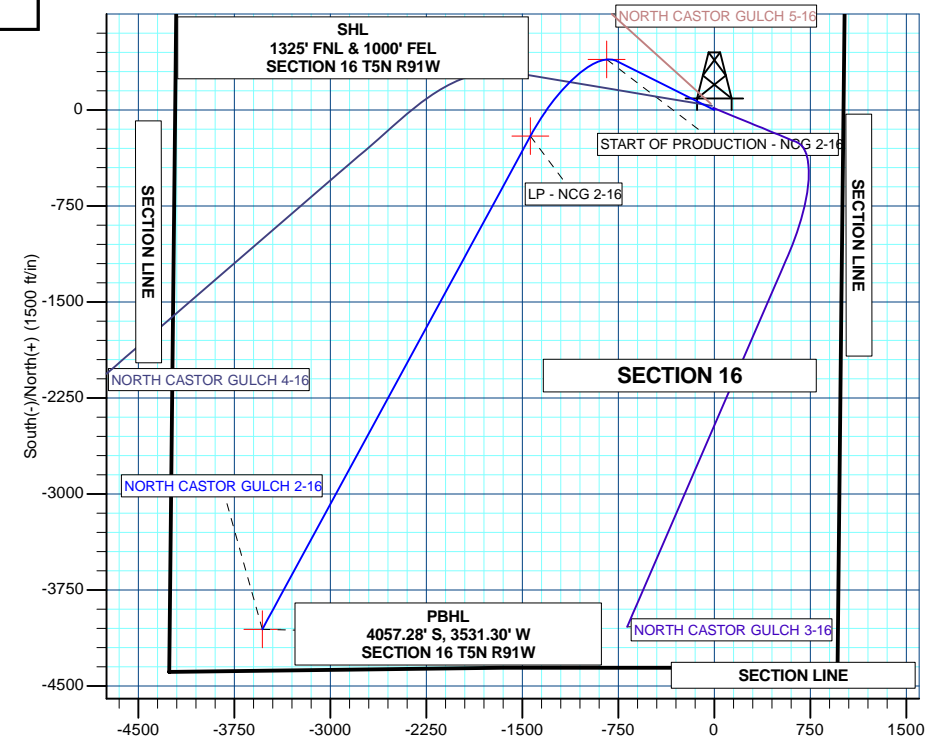
SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1995.00	0.00	0.00	1995.00	0.00	0.00	0.00	0.00	0.00	Start Build 2.00
3104.28	22.19	296.54	3076.77	94.77	-189.74	2.00	296.54	53.09	Start 1698.88 hold at 3104.28 MD
4803.16	22.19	296.54	4649.88	381.40	-763.66	0.00	0.00	213.67	Start DLS 7.00 TFO -87.65
6095.77	91.33	208.53	5395.00	-204.33	-1436.65	7.00	-87.65	1097.31	Start 4386.71 hold at 6095.77 MD
10482.48	91.33	208.53	5293.00	-4057.28	-3531.30	0.00	0.00	5378.81	TD at 10482.48



Azimuths to True North
Magnetic North: 10.14°

Magnetic Field
Strength: 52596.6snT
Dip Angle: 66.49°
Date: 8/15/2012
Model: BGGM2012



Plan: PLAN 4 (NORTH CASTOR GULCH 2-16/NORTH CASTOR GULCH 2-16)

Created By: MATT MAYDEW

Date: 16:17, September 24 2012



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well NORTH CASTOR GULCH 2-16
Company:	SHELL E&P	TVD Reference:	KB @ 7003.00ft
Project:	MOFFAT COUNTY, CO	MD Reference:	KB @ 7003.00ft
Site:	NORTH CASTOR GULCH 2-16	North Reference:	True
Well:	NORTH CASTOR GULCH 2-16	Survey Calculation Method:	Minimum Curvature
Wellbore:	NORTH CASTOR GULCH 2-16		
Design:	PLAN 4		

Project	MOFFAT COUNTY, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site		NORTH CASTOR GULCH 2-16			
Site Position:		Northing:	1,392,645.78 usft	Latitude:	40° 23' 31.560 N
From:	Lat/Long	Easting:	2,413,539.13 usft	Longitude:	107° 36' 20.370 W
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16"	Grid Convergence:	-1.36 °

Well	NORTH CASTOR GULCH 2-16					
Well Position	+N/-S	0.00 ft	Northing:	1,392,645.78 usft	Latitude:	40° 23' 31.560 N
	+E/-W	0.00 ft	Easting:	2,413,539.13 usft	Longitude:	107° 36' 20.370 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	6,987.00 ft

Wellbore	NORTH CASTOR GULCH 2-16				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2012	8/15/2012	10.14	66.49	52,597

Design	PLAN 4			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	221.04

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,995.00	0.00	0.00	1,995.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,104.28	22.19	296.54	3,076.77	94.77	-189.74	2.00	2.00	0.00	296.54	
4,803.16	22.19	296.54	4,649.88	381.40	-763.66	0.00	0.00	0.00	0.00	
6,095.77	91.33	208.53	5,395.00	-204.33	-1,436.65	7.00	5.35	-6.81	-87.65	LP - NCG 2-16
10,482.48	91.33	208.53	5,293.00	-4,057.28	-3,531.30	0.00	0.00	0.00	0.00	PBHL - NORTH CAS



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well NORTH CASTOR GULCH 2-16
Company:	SHELL E&P	TVD Reference:	KB @ 7003.00ft
Project:	MOFFAT COUNTY, CO	MD Reference:	KB @ 7003.00ft
Site:	NORTH CASTOR GULCH 2-16	North Reference:	True
Well:	NORTH CASTOR GULCH 2-16	Survey Calculation Method:	Minimum Curvature
Wellbore:	NORTH CASTOR GULCH 2-16		
Design:	PLAN 4		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
1,995.00	0.00	0.00	1,995.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.10	296.54	2,000.00	0.00	0.00	0.00	2.00	2.00	0.00
2,100.00	2.10	296.54	2,099.98	0.86	-1.72	0.48	2.00	2.00	0.00
2,200.00	4.10	296.54	2,199.83	3.28	-6.56	1.84	2.00	2.00	0.00
2,300.00	6.10	296.54	2,299.42	7.25	-14.51	4.06	2.00	2.00	0.00
2,400.00	8.10	296.54	2,398.65	12.77	-25.57	7.15	2.00	2.00	0.00
2,500.00	10.10	296.54	2,497.39	19.84	-39.72	11.11	2.00	2.00	0.00
2,600.00	12.10	296.54	2,595.51	28.44	-56.94	15.93	2.00	2.00	0.00
2,700.00	14.10	296.54	2,692.91	38.56	-77.22	21.60	2.00	2.00	0.00
2,800.00	16.10	296.54	2,789.45	50.20	-100.52	28.12	2.00	2.00	0.00
2,900.00	18.10	296.54	2,885.02	63.34	-126.82	35.48	2.00	2.00	0.00
3,000.00	20.10	296.54	2,979.51	77.96	-156.10	43.67	2.00	2.00	0.00
Start 1698.88 hold at 3104.28 MD									
3,104.28	22.19	296.54	3,076.77	94.77	-189.74	53.09	2.00	2.00	0.00
3,200.00	22.19	296.54	3,165.40	110.91	-222.08	62.14	0.00	0.00	0.00
3,300.00	22.19	296.54	3,258.00	127.79	-255.86	71.59	0.00	0.00	0.00
3,400.00	22.19	296.54	3,350.59	144.66	-289.64	81.04	0.00	0.00	0.00
3,500.00	22.19	296.54	3,443.19	161.53	-323.43	90.49	0.00	0.00	0.00
3,600.00	22.19	296.54	3,535.79	178.40	-357.21	99.94	0.00	0.00	0.00
3,700.00	22.19	296.54	3,628.38	195.27	-390.99	109.40	0.00	0.00	0.00
3,800.00	22.19	296.54	3,720.98	212.15	-424.77	118.85	0.00	0.00	0.00
3,900.00	22.19	296.54	3,813.58	229.02	-458.55	128.30	0.00	0.00	0.00
4,000.00	22.19	296.54	3,906.17	245.89	-492.34	137.75	0.00	0.00	0.00
4,100.00	22.19	296.54	3,998.77	262.76	-526.12	147.20	0.00	0.00	0.00
4,200.00	22.19	296.54	4,091.37	279.63	-559.90	156.66	0.00	0.00	0.00
4,300.00	22.19	296.54	4,183.96	296.51	-593.68	166.11	0.00	0.00	0.00
4,400.00	22.19	296.54	4,276.56	313.38	-627.46	175.56	0.00	0.00	0.00
4,500.00	22.19	296.54	4,369.16	330.25	-661.24	185.01	0.00	0.00	0.00
4,600.00	22.19	296.54	4,461.75	347.12	-695.03	194.46	0.00	0.00	0.00
4,700.00	22.19	296.54	4,554.35	363.99	-728.81	203.92	0.00	0.00	0.00
Start DLS 7.00 TFO -87.65									
4,803.16	22.19	296.54	4,649.88	381.40	-763.66	213.67	0.00	0.00	0.00



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well NORTH CASTOR GULCH 2-16
Company:	SHELL E&P	TVD Reference:	KB @ 7003.00ft
Project:	MOFFAT COUNTY, CO	MD Reference:	KB @ 7003.00ft
Site:	NORTH CASTOR GULCH 2-16	North Reference:	True
Well:	NORTH CASTOR GULCH 2-16	Survey Calculation Method:	Minimum Curvature
Wellbore:	NORTH CASTOR GULCH 2-16		
Design:	PLAN 4		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,850.00	22.55	287.97	4,693.20	388.12	-780.12	219.40	7.00	0.77	-18.30
4,900.00	23.41	279.27	4,739.25	392.68	-799.04	228.39	7.00	1.73	-17.39
4,950.00	24.72	271.31	4,784.91	394.52	-819.31	240.30	7.00	2.62	-15.93
5,000.00	26.41	264.19	4,830.02	393.63	-840.83	255.10	7.00	3.38	-14.23
START OF PRODUCTION - NCG 2-16									
5,001.00	26.45	264.06	4,830.92	393.59	-841.27	255.43	7.00	3.71	-13.33
5,050.00	28.41	257.94	4,874.42	390.02	-863.53	272.73	7.00	4.00	-12.48
5,100.00	30.65	252.50	4,917.93	383.70	-887.33	293.12	7.00	4.49	-10.90
5,150.00	33.10	247.75	4,960.39	374.70	-912.13	316.19	7.00	4.89	-9.49
5,200.00	35.70	243.61	5,001.65	363.04	-937.84	341.87	7.00	5.21	-8.29
5,250.00	38.43	239.97	5,041.54	348.77	-964.37	370.05	7.00	5.46	-7.28
5,300.00	41.26	236.75	5,079.93	331.95	-991.62	400.63	7.00	5.66	-6.44
5,350.00	44.17	233.87	5,116.67	312.63	-1,019.48	433.49	7.00	5.82	-5.75
5,400.00	47.14	231.29	5,151.62	290.89	-1,047.86	468.52	7.00	5.95	-5.17
5,450.00	50.16	228.94	5,184.65	266.82	-1,076.64	505.58	7.00	6.05	-4.69
5,500.00	53.23	226.80	5,215.64	240.49	-1,105.73	544.53	7.00	6.14	-4.29
5,550.00	56.34	224.82	5,244.47	212.01	-1,135.00	585.23	7.00	6.21	-3.96
5,600.00	59.47	222.98	5,271.03	181.48	-1,164.35	627.53	7.00	6.27	-3.68
5,650.00	62.63	221.25	5,295.23	149.02	-1,193.68	671.27	7.00	6.32	-3.45
5,700.00	65.81	219.62	5,316.98	114.76	-1,222.87	716.28	7.00	6.36	-3.26
5,750.00	69.00	218.07	5,336.19	78.81	-1,251.81	762.40	7.00	6.39	-3.10
5,800.00	72.21	216.59	5,352.79	41.30	-1,280.40	809.45	7.00	6.42	-2.97
5,850.00	75.43	215.15	5,366.73	2.40	-1,308.53	857.27	7.00	6.44	-2.86
5,900.00	78.65	213.76	5,377.94	-37.78	-1,336.09	905.67	7.00	6.45	-2.78
5,950.00	81.89	212.40	5,386.39	-79.06	-1,362.98	954.47	7.00	6.47	-2.72
6,000.00	85.13	211.06	5,392.04	-121.31	-1,389.11	1,003.48	7.00	6.48	-2.68
6,050.00	88.37	209.74	5,394.88	-164.36	-1,414.37	1,052.54	7.00	6.48	-2.65
Start 4386.71 hold at 6095.77 MD - LP - NCG 2-16									
6,095.77	91.33	208.53	5,395.00	-204.33	-1,436.65	1,097.31	7.00	6.48	-2.64
6,100.00	91.33	208.53	5,394.90	-208.05	-1,438.67	1,101.45	0.00	0.00	0.00
6,200.00	91.33	208.53	5,392.58	-295.88	-1,486.42	1,199.05	0.00	0.00	0.00
6,300.00	91.33	208.53	5,390.25	-383.71	-1,534.17	1,296.65	0.00	0.00	0.00
6,400.00	91.33	208.53	5,387.93	-471.54	-1,581.92	1,394.25	0.00	0.00	0.00
6,500.00	91.33	208.53	5,385.60	-559.38	-1,629.67	1,491.85	0.00	0.00	0.00
6,600.00	91.33	208.53	5,383.28	-647.21	-1,677.42	1,589.46	0.00	0.00	0.00
6,700.00	91.33	208.53	5,380.95	-735.04	-1,725.17	1,687.06	0.00	0.00	0.00
6,800.00	91.33	208.53	5,378.63	-822.87	-1,772.92	1,784.66	0.00	0.00	0.00
6,900.00	91.33	208.53	5,376.30	-910.71	-1,820.67	1,882.26	0.00	0.00	0.00
7,000.00	91.33	208.53	5,373.97	-998.54	-1,868.42	1,979.86	0.00	0.00	0.00
7,100.00	91.33	208.53	5,371.65	-1,086.37	-1,916.17	2,077.46	0.00	0.00	0.00
7,200.00	91.33	208.53	5,369.32	-1,174.20	-1,963.92	2,175.06	0.00	0.00	0.00
7,300.00	91.33	208.53	5,367.00	-1,262.04	-2,011.67	2,272.67	0.00	0.00	0.00
7,400.00	91.33	208.53	5,364.67	-1,349.87	-2,059.42	2,370.27	0.00	0.00	0.00
7,500.00	91.33	208.53	5,362.35	-1,437.70	-2,107.17	2,467.87	0.00	0.00	0.00
7,600.00	91.33	208.53	5,360.02	-1,525.53	-2,154.92	2,565.47	0.00	0.00	0.00
7,700.00	91.33	208.53	5,357.70	-1,613.37	-2,202.67	2,663.07	0.00	0.00	0.00
7,800.00	91.33	208.53	5,355.37	-1,701.20	-2,250.42	2,760.67	0.00	0.00	0.00
7,900.00	91.33	208.53	5,353.05	-1,789.03	-2,298.17	2,858.28	0.00	0.00	0.00
8,000.00	91.33	208.53	5,350.72	-1,876.86	-2,345.92	2,955.88	0.00	0.00	0.00
8,100.00	91.33	208.53	5,348.40	-1,964.70	-2,393.67	3,053.48	0.00	0.00	0.00
8,200.00	91.33	208.53	5,346.07	-2,052.53	-2,441.42	3,151.08	0.00	0.00	0.00
8,300.00	91.33	208.53	5,343.75	-2,140.36	-2,489.17	3,248.68	0.00	0.00	0.00
8,400.00	91.33	208.53	5,341.42	-2,228.19	-2,536.92	3,346.28	0.00	0.00	0.00
8,500.00	91.33	208.53	5,339.10	-2,316.02	-2,584.67	3,443.88	0.00	0.00	0.00



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well NORTH CASTOR GULCH 2-16
Company:	SHELL E&P	TVD Reference:	KB @ 7003.00ft
Project:	MOFFAT COUNTY, CO	MD Reference:	KB @ 7003.00ft
Site:	NORTH CASTOR GULCH 2-16	North Reference:	True
Well:	NORTH CASTOR GULCH 2-16	Survey Calculation Method:	Minimum Curvature
Wellbore:	NORTH CASTOR GULCH 2-16		
Design:	PLAN 4		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
8,600.00	91.33	208.53	5,336.77	-2,403.86	-2,632.42	3,541.49	0.00	0.00	0.00	
8,700.00	91.33	208.53	5,334.45	-2,491.69	-2,680.17	3,639.09	0.00	0.00	0.00	
8,800.00	91.33	208.53	5,332.12	-2,579.52	-2,727.92	3,736.69	0.00	0.00	0.00	
8,900.00	91.33	208.53	5,329.80	-2,667.35	-2,775.67	3,834.29	0.00	0.00	0.00	
9,000.00	91.33	208.53	5,327.47	-2,755.19	-2,823.42	3,931.89	0.00	0.00	0.00	
9,100.00	91.33	208.53	5,325.15	-2,843.02	-2,871.17	4,029.49	0.00	0.00	0.00	
9,200.00	91.33	208.53	5,322.82	-2,930.85	-2,918.92	4,127.10	0.00	0.00	0.00	
9,300.00	91.33	208.53	5,320.50	-3,018.68	-2,966.67	4,224.70	0.00	0.00	0.00	
9,400.00	91.33	208.53	5,318.17	-3,106.52	-3,014.42	4,322.30	0.00	0.00	0.00	
9,500.00	91.33	208.53	5,315.84	-3,194.35	-3,062.17	4,419.90	0.00	0.00	0.00	
9,600.00	91.33	208.53	5,313.52	-3,282.18	-3,109.92	4,517.50	0.00	0.00	0.00	
9,700.00	91.33	208.53	5,311.19	-3,370.01	-3,157.67	4,615.10	0.00	0.00	0.00	
9,800.00	91.33	208.53	5,308.87	-3,457.85	-3,205.42	4,712.70	0.00	0.00	0.00	
9,900.00	91.33	208.53	5,306.54	-3,545.68	-3,253.17	4,810.31	0.00	0.00	0.00	
10,000.00	91.33	208.53	5,304.22	-3,633.51	-3,300.92	4,907.91	0.00	0.00	0.00	
10,100.00	91.33	208.53	5,301.89	-3,721.34	-3,348.67	5,005.51	0.00	0.00	0.00	
10,200.00	91.33	208.53	5,299.57	-3,809.18	-3,396.42	5,103.11	0.00	0.00	0.00	
10,300.00	91.33	208.53	5,297.24	-3,897.01	-3,444.17	5,200.71	0.00	0.00	0.00	
10,400.00	91.33	208.53	5,294.92	-3,984.84	-3,491.92	5,298.31	0.00	0.00	0.00	
TD at 10482.48 - PBHL - NORTH CASTOR GULCH 2-16										
10,482.48	91.33	208.53	5,293.00	-4,057.28	-3,531.30	5,378.81	0.00	0.00	0.00	

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
- hit/miss target										
- Shape										
START OF PRODUCTIC	0.00	0.00	4,830.92	393.59	-841.27	1,393,059.23	2,412,707.44	40° 23' 35.449 N	107° 36' 31.243 W	
- plan hits target center										
- Point										
PBHL - NORTH CASTO	0.00	0.00	5,293.00	-4,057.28	-3,531.30	1,388,673.49	2,409,912.49	40° 22' 51.463 N	107° 37' 6.002 W	
- plan hits target center										
- Point										
LP - NCG 2-16	0.00	0.00	5,395.00	-204.33	-1,436.65	1,392,475.62	2,412,098.04	40° 23' 29.540 N	107° 36' 38.938 W	
- plan hits target center										
- Point										

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
		7"		8-3/4	



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well NORTH CASTOR GULCH 2-16
Company:	SHELL E&P	TVD Reference:	KB @ 7003.00ft
Project:	MOFFAT COUNTY, CO	MD Reference:	KB @ 7003.00ft
Site:	NORTH CASTOR GULCH 2-16	North Reference:	True
Well:	NORTH CASTOR GULCH 2-16	Survey Calculation Method:	Minimum Curvature
Wellbore:	NORTH CASTOR GULCH 2-16		
Design:	PLAN 4		

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,995.00	1,995.00	0.00	0.00	Start Build 2.00
3,104.28	3,076.77	94.77	-189.74	Start 1698.88 hold at 3104.28 MD
4,803.16	4,649.88	381.40	-763.66	Start DLS 7.00 TFO -87.65
6,095.77	5,395.00	-204.33	-1,436.65	Start 4386.71 hold at 6095.77 MD
10,482.48	5,293.00	-4,057.28	-3,531.30	TD at 10482.48



SHELL E&P

**MOFFAT COUNTY, CO
NORTH CASTOR GULCH 2-16
NORTH CASTOR GULCH 2-16**

**NORTH CASTOR GULCH 2-16
PLAN #2**

Anticollision Report

17 August, 2012



Weatherford®



Company:	SHELL E&P	Local Co-ordinate Reference:	Well NORTH CASTOR GULCH 2-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	KB @ 7008.00ft (SAVANA 650)
Reference Site:	NORTH CASTOR GULCH 2-16	MD Reference:	KB @ 7008.00ft (SAVANA 650)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	NORTH CASTOR GULCH 2-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	NORTH CASTOR GULCH 2-16	Database:	EDM 5000.1 Single User Db
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Reference	PLAN #2		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.00ft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,611.13 ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date 8/17/2012			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	10,481.67	PLAN #2 (NORTH CASTOR GULCH 2-16	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
North Castor Gulch 1-16						
North Castor Gulch 1-16 - North Castor Gulch 1-16 - Des	2,000.00	1,989.90	85.03	76.27	9.704	CC, ES
North Castor Gulch 1-16 - North Castor Gulch 1-16 - Des	9,700.00	9,346.59	1,254.32	1,079.77	7.186	SF
North Castor Gulch 1-16 - North Castor Gulch 1-16 Pilot	2,000.00	1,989.90	85.03	76.27	9.704	CC, ES
North Castor Gulch 1-16 - North Castor Gulch 1-16 Pilot	2,100.00	2,089.88	86.44	77.24	9.397	SF
NORTH CASTOR GULCH 3-16						
NORTH CASTOR GULCH 3-16 - NORTH CASTOR GUL	2,000.00	2,000.00	18.66	9.93	2.138	CC, ES, SF
NORTH CASTOR GULCH 4-16						
NORTH CASTOR GULCH 4-16 - NORTH CASTOR GUL	1,900.00	1,900.00	17.40	9.12	2.102	CC, ES, SF
NORTH CASTOR GULCH 5-16						
NORTH CASTOR GULCH 5-16 - NORTH CASTOR GUL	1,933.37	1,933.37	36.07	27.64	4.278	CC, ES
NORTH CASTOR GULCH 5-16 - NORTH CASTOR GUL	2,000.00	1,999.40	36.48	27.75	4.180	SF

Offset Design	North Castor Gulch 1-16 - North Castor Gulch 1-16 - North Castor Gulch 1-16 - Design #10											Offset Site Error:	0.67 ft
Survey Program:	0-MWD											Offset Well Error:	0.00 ft
Reference	Offset	Semi Major Axis		Distance									Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.67	79.00	16.23	83.47	85.63				
100.00	100.00	89.90	89.90	0.09	0.67	79.00	16.23	83.47	85.03	84.27	0.77	110.869	
200.00	200.00	189.90	189.90	0.32	0.73	79.00	16.23	83.47	85.03	83.98	1.05	80.937	
300.00	300.00	289.90	289.90	0.54	0.85	79.00	16.23	83.47	85.03	83.64	1.39	61.046	
400.00	400.00	389.90	389.90	0.77	1.00	79.00	16.23	83.47	85.03	83.26	1.77	47.973	
500.00	500.00	489.90	489.90	0.99	1.18	79.00	16.23	83.47	85.03	82.86	2.17	39.099	
600.00	600.00	589.90	589.90	1.22	1.37	79.00	16.23	83.47	85.03	82.44	2.59	32.819	
700.00	700.00	689.90	689.90	1.44	1.57	79.00	16.23	83.47	85.03	82.02	3.02	28.194	
800.00	800.00	789.90	789.90	1.67	1.78	79.00	16.23	83.47	85.03	81.59	3.45	24.669	
900.00	900.00	889.90	889.90	1.89	1.99	79.00	16.23	83.47	85.03	81.15	3.88	21.905	
1,000.00	1,000.00	989.90	989.90	2.12	2.20	79.00	16.23	83.47	85.03	80.71	4.32	19.685	
1,100.00	1,100.00	1,089.90	1,089.90	2.34	2.42	79.00	16.23	83.47	85.03	80.27	4.76	17.865	
1,200.00	1,200.00	1,189.90	1,189.90	2.57	2.63	79.00	16.23	83.47	85.03	79.83	5.20	16.349	
1,300.00	1,300.00	1,289.90	1,289.90	2.79	2.85	79.00	16.23	83.47	85.03	79.39	5.64	15.066	
1,400.00	1,400.00	1,389.90	1,389.90	3.02	3.07	79.00	16.23	83.47	85.03	78.95	6.09	13.968	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Weatherford International Ltd.

Anticollision Report



Company:	SHELL E&P	Local Co-ordinate Reference:	Well NORTH CASTOR GULCH 2-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	KB @ 7008.00ft (SAVANA 650)
Reference Site:	NORTH CASTOR GULCH 2-16	MD Reference:	KB @ 7008.00ft (SAVANA 650)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	NORTH CASTOR GULCH 2-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	NORTH CASTOR GULCH 2-16	Database:	EDM 5000.1 Single User Db
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design		North Castor Gulch 1-16 - North Castor Gulch 1-16 - North Castor Gulch 1-16 - Design #10											Offset Site Error: 0.67 ft	
Survey Program: 0-MWD													Offset Well Error: 0.00 ft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
1,500.00	1,500.00	1,489.90	1,489.90	3.24	3.29	79.00	16.23	83.47	85.03	78.50	6.53	13.017	9.704 CC, ES	
1,600.00	1,600.00	1,589.90	1,589.90	3.47	3.51	79.00	16.23	83.47	85.03	78.06	6.98	12.187		
1,700.00	1,700.00	1,689.90	1,689.90	3.69	3.73	79.00	16.23	83.47	85.03	77.61	7.42	11.455		
1,800.00	1,800.00	1,789.90	1,789.90	3.92	3.95	79.00	16.23	83.47	85.03	77.16	7.87	10.806		
1,900.00	1,900.00	1,889.90	1,889.90	4.14	4.18	79.00	16.23	83.47	85.03	76.72	8.32	10.226		
2,000.00	2,000.00	1,989.90	1,989.90	4.36	4.40	79.00	16.23	83.47	85.03	76.27	8.76	9.704		
2,100.00	2,099.98	2,089.88	2,089.88	4.58	4.62	143.82	16.23	83.47	86.44	77.24	9.20	9.397		
2,200.00	2,199.84	2,189.74	2,189.74	4.80	4.84	145.73	16.23	83.47	90.71	81.09	9.62	9.429		
2,300.00	2,299.45	2,289.35	2,289.35	5.02	5.06	148.51	16.23	83.47	98.04	88.01	10.04	9.769		
2,400.00	2,398.70	2,388.60	2,388.60	5.25	5.29	151.77	16.23	83.47	108.64	98.20	10.44	10.404		
2,500.00	2,497.47	2,487.37	2,487.37	5.50	5.51	155.10	16.23	83.47	122.67	111.83	10.84	11.321		
2,600.00	2,595.62	2,585.52	2,585.52	5.78	5.72	158.24	16.23	83.47	140.25	129.03	11.22	12.502		
2,700.00	2,693.06	2,682.96	2,682.96	6.09	5.94	161.06	16.23	83.47	161.41	149.82	11.59	13.929		
2,800.00	2,789.64	2,779.54	2,779.54	6.45	6.16	163.49	16.23	83.47	186.14	174.20	11.95	15.583		
2,900.00	2,885.27	2,875.17	2,875.17	6.86	6.37	165.56	16.23	83.47	214.41	202.12	12.29	17.444		
3,000.00	2,979.82	2,969.72	2,969.72	7.33	6.58	167.30	16.23	83.47	246.15	233.52	12.63	19.496		
3,100.00	3,073.17	3,063.07	3,063.07	7.87	6.79	168.76	16.23	83.47	281.30	268.34	12.96	21.706		
3,200.00	3,165.98	3,155.88	3,155.88	8.46	7.00	170.07	16.23	83.47	317.99	304.58	13.41	23.709		
3,300.00	3,258.79	3,248.69	3,248.69	9.09	7.21	171.10	16.23	83.47	354.80	340.93	13.87	25.573		
3,400.00	3,351.59	3,341.49	3,341.49	9.73	7.41	171.95	16.23	83.47	391.69	377.35	14.34	27.309		
3,500.00	3,444.40	3,434.30	3,434.30	10.40	7.62	172.64	16.23	83.47	428.64	413.83	14.82	28.927		
3,600.00	3,537.21	3,527.11	3,527.11	11.08	7.83	173.23	16.23	83.47	465.64	450.34	15.30	30.436		
3,700.00	3,630.01	3,619.91	3,619.91	11.78	8.04	173.73	16.23	83.47	502.67	486.89	15.78	31.845		
3,800.00	3,722.82	3,712.72	3,712.72	12.49	8.25	174.16	16.23	83.47	539.74	523.46	16.27	33.164		
3,900.00	3,815.63	3,805.53	3,805.53	13.21	8.45	174.54	16.23	83.47	576.82	560.05	16.77	34.398		
4,000.00	3,908.43	3,898.33	3,898.33	13.93	8.66	174.87	16.23	83.47	613.93	596.66	17.27	35.555		
4,100.00	4,001.24	3,991.14	3,991.14	14.67	8.87	175.16	16.23	83.47	651.04	633.28	17.77	36.642		
4,200.00	4,094.05	4,083.95	4,083.95	15.41	9.08	175.42	16.23	83.47	688.18	669.91	18.27	37.664		
4,300.00	4,186.85	4,176.75	4,176.75	16.15	9.29	175.66	16.23	83.47	725.32	706.54	18.78	38.625		
4,400.00	4,279.66	4,269.56	4,269.56	16.90	9.49	175.87	16.23	83.47	762.47	743.19	19.29	39.532		
4,500.00	4,372.47	4,362.37	4,362.37	17.65	9.70	176.06	16.23	83.47	799.64	779.84	19.80	40.388		
4,600.00	4,465.28	4,460.96	4,460.89	18.41	9.88	176.47	13.49	81.98	836.50	816.21	20.28	41.247		
4,700.00	4,558.08	4,559.18	4,558.59	19.16	10.05	177.32	4.85	77.29	872.78	852.04	20.75	42.063		
4,800.00	4,650.89	4,655.85	4,653.88	19.93	10.23	178.52	-9.38	69.56	908.74	887.51	21.23	42.811		
4,900.00	4,743.40	4,751.35	4,746.73	20.64	10.41	-162.07	-28.95	58.94	944.88	923.13	21.75	43.436		
5,000.00	4,834.37	4,847.67	4,838.59	21.36	10.63	-144.84	-54.35	45.14	981.05	958.55	22.50	43.597		
5,100.00	4,922.46	4,945.31	4,928.12	22.10	10.90	-131.38	-88.47	26.62	1,016.37	992.85	23.52	43.211		
5,200.00	5,006.34	5,042.92	5,012.53	22.85	11.27	-121.06	-131.44	3.28	1,050.20	1,025.40	24.81	42.335		
5,300.00	5,084.76	5,140.75	5,090.90	23.62	11.75	-113.10	-182.83	-24.62	1,082.02	1,055.68	26.34	41.081		
5,400.00	5,156.56	5,238.99	5,162.24	24.43	12.40	-106.88	-242.11	-56.81	1,111.33	1,083.24	28.09	39.563		
5,500.00	5,220.67	5,337.76	5,225.57	25.27	13.22	-102.00	-308.65	-92.95	1,137.66	1,107.63	30.03	37.881		
5,600.00	5,276.13	5,435.52	5,281.89	26.16	14.19	-98.33	-378.87	-131.07	1,160.67	1,128.58	32.09	36.171		
5,700.00	5,322.11	5,535.44	5,336.42	27.10	15.31	-95.91	-452.41	-171.01	1,180.12	1,145.88	34.23	34.475		
5,800.00	5,357.92	5,637.83	5,381.96	28.09	16.63	-94.23	-532.93	-214.74	1,195.61	1,159.06	36.55	32.710		
5,900.00	5,383.05	5,741.97	5,416.53	29.12	18.11	-93.17	-619.20	-261.58	1,206.89	1,167.86	39.03	30.921		
6,000.00	5,397.10	5,847.63	5,438.97	30.19	19.75	-92.69	-709.87	-310.82	1,213.78	1,172.14	41.64	29.149		
6,100.00	5,399.88	5,954.48	5,448.36	31.27	21.50	-92.76	-803.35	-361.57	1,216.15	1,171.78	44.37	27.408		
6,200.00	5,397.56	6,061.91	5,444.16	32.43	23.32	-92.68	-897.62	-412.76	1,216.12	1,168.32	47.80	25.443		
6,300.00	5,395.23	6,161.68	5,433.73	33.67	25.06	-92.30	-984.82	-460.11	1,215.82	1,164.63	51.18	23.753		
6,400.00	5,392.91	6,261.35	5,423.32	34.98	26.83	-91.91	-1,071.93	-507.42	1,215.57	1,160.92	54.64	22.245		
6,500.00	5,390.58	6,361.02	5,412.90	36.36	28.63	-91.53	-1,159.03	-554.72	1,215.37	1,157.20	58.17	20.894		
6,600.00	5,388.26	6,460.69	5,402.48	37.79	30.44	-91.15	-1,246.14	-602.02	1,215.23	1,153.48	61.75	19.681		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Weatherford International Ltd.

Anticollision Report



Company:	SHELL E&P	Local Co-ordinate Reference:	Well NORTH CASTOR GULCH 2-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	KB @ 7008.00ft (SAVANA 650)
Reference Site:	NORTH CASTOR GULCH 2-16	MD Reference:	KB @ 7008.00ft (SAVANA 650)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	NORTH CASTOR GULCH 2-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	NORTH CASTOR GULCH 2-16	Database:	EDM 5000.1 Single User Db
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design		North Castor Gulch 1-16 - North Castor Gulch 1-16 - North Castor Gulch 1-16 - Design #10										Offset Site Error:		0.67 ft
Survey Program: 0-MWD												Offset Well Error:		0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
6,700.00	5,385.93	6,560.35	5,392.06	39.28	32.28	-90.77	-1,333.25	-649.32	1,215.14	1,149.77	65.37	18.589		
6,800.00	5,383.61	6,660.02	5,381.64	40.81	34.14	-90.38	-1,420.36	-696.62	1,215.11	1,146.08	69.02	17.604		
6,810.60	5,383.36	6,670.58	5,380.54	40.98	34.34	-90.34	-1,429.59	-701.63	1,215.11	1,145.69	69.41	17.505		
6,900.00	5,381.28	6,759.69	5,371.23	42.39	36.01	-90.00	-1,507.47	-743.92	1,215.13	1,142.42	72.71	16.711		
7,000.00	5,378.96	6,859.36	5,360.81	44.00	37.89	-89.62	-1,594.58	-791.22	1,215.20	1,138.78	76.43	15.901		
7,100.00	5,376.63	6,959.03	5,350.39	45.64	39.78	-89.24	-1,681.68	-838.52	1,215.33	1,135.18	80.16	15.162		
7,200.00	5,374.31	7,058.70	5,339.97	47.31	41.68	-88.85	-1,768.79	-885.82	1,215.52	1,131.61	83.91	14.486		
7,300.00	5,371.98	7,158.36	5,329.55	49.00	43.59	-88.47	-1,855.90	-933.12	1,215.76	1,128.09	87.67	13.867		
7,400.00	5,369.66	7,258.03	5,319.13	50.72	45.50	-88.09	-1,943.01	-980.43	1,216.05	1,124.60	91.45	13.298		
7,500.00	5,367.33	7,357.70	5,308.72	52.46	47.42	-87.71	-2,030.12	-1,027.73	1,216.40	1,121.17	95.23	12.773		
7,600.00	5,365.00	7,457.37	5,298.30	54.22	49.34	-87.33	-2,117.22	-1,075.03	1,216.80	1,117.78	99.02	12.288		
7,700.00	5,362.68	7,557.04	5,287.88	56.00	51.27	-86.95	-2,204.33	-1,122.33	1,217.26	1,114.44	102.82	11.839		
7,800.00	5,360.35	7,656.71	5,277.46	57.79	53.21	-86.56	-2,291.44	-1,169.63	1,217.77	1,111.15	106.62	11.421		
7,900.00	5,358.03	7,756.37	5,267.04	59.59	55.14	-86.18	-2,378.55	-1,216.93	1,218.34	1,107.91	110.42	11.033		
8,000.00	5,355.70	7,856.04	5,256.63	61.41	57.08	-85.80	-2,465.66	-1,264.23	1,218.96	1,104.73	114.23	10.671		
8,100.00	5,353.38	7,955.71	5,246.21	63.24	59.03	-85.42	-2,552.77	-1,311.53	1,219.63	1,101.60	118.03	10.333		
8,200.00	5,351.05	8,055.38	5,235.79	65.07	60.97	-85.04	-2,639.87	-1,358.83	1,220.36	1,098.53	121.83	10.017		
8,300.00	5,348.73	8,155.05	5,225.37	66.92	62.92	-84.67	-2,726.98	-1,406.14	1,221.14	1,095.51	125.63	9.720		
8,400.00	5,346.40	8,254.72	5,214.95	68.78	64.87	-84.29	-2,814.09	-1,453.44	1,221.97	1,092.55	129.42	9.442		
8,500.00	5,344.08	8,354.38	5,204.53	70.64	66.82	-83.91	-2,901.20	-1,500.74	1,222.86	1,089.65	133.21	9.180		
8,600.00	5,341.75	8,454.05	5,194.12	72.52	68.78	-83.53	-2,988.31	-1,548.04	1,223.80	1,086.80	137.00	8.933		
8,700.00	5,339.43	8,553.72	5,183.70	74.40	70.73	-83.16	-3,075.42	-1,595.34	1,224.80	1,084.02	140.78	8.700		
8,800.00	5,337.10	8,653.39	5,173.28	76.28	72.69	-82.78	-3,162.52	-1,642.64	1,225.84	1,081.29	144.55	8.480		
8,900.00	5,334.78	8,753.06	5,162.86	78.17	74.65	-82.40	-3,249.63	-1,689.94	1,226.94	1,078.63	148.31	8.273		
9,000.00	5,332.45	8,852.73	5,152.44	80.07	76.61	-82.03	-3,336.74	-1,737.24	1,228.10	1,076.03	152.07	8.076		
9,100.00	5,330.13	8,952.39	5,142.03	81.97	78.57	-81.65	-3,423.85	-1,784.54	1,229.31	1,073.49	155.82	7.889		
9,200.00	5,327.80	9,052.06	5,131.61	83.88	80.54	-81.28	-3,510.96	-1,831.84	1,230.57	1,071.01	159.56	7.712		
9,300.00	5,325.48	9,151.73	5,121.19	85.79	82.50	-80.91	-3,598.07	-1,879.15	1,231.88	1,068.59	163.29	7.544		
9,400.00	5,323.15	9,251.40	5,110.77	87.71	84.46	-80.54	-3,685.17	-1,926.45	1,233.24	1,066.23	167.01	7.384		
9,500.00	5,320.83	9,346.59	5,100.82	89.62	86.34	-80.18	-3,768.36	-1,971.62	1,234.67	1,064.03	170.64	7.236		
9,600.00	5,318.50	9,346.59	5,100.82	91.55	86.34	-80.18	-3,768.36	-1,971.62	1,240.51	1,067.92	172.59	7.188		
9,700.00	5,316.18	9,346.59	5,100.82	93.47	86.34	-80.18	-3,768.36	-1,971.62	1,254.32	1,079.77	174.54	7.186 SF		
9,800.00	5,313.85	9,346.59	5,100.82	95.40	86.34	-80.18	-3,768.36	-1,971.62	1,275.84	1,099.34	176.50	7.229		
9,900.00	5,311.53	9,346.59	5,100.82	97.33	86.34	-80.18	-3,768.36	-1,971.62	1,304.69	1,126.24	178.45	7.311		
10,000.00	5,309.20	9,346.59	5,100.82	99.27	86.34	-80.18	-3,768.36	-1,971.62	1,340.40	1,159.99	180.41	7.430		
10,100.00	5,306.87	9,346.59	5,100.82	101.21	86.34	-80.18	-3,768.36	-1,971.62	1,382.44	1,200.07	182.37	7.581		
10,200.00	5,304.55	9,346.59	5,100.82	103.15	86.34	-80.18	-3,768.36	-1,971.62	1,430.24	1,245.92	184.33	7.759		
10,300.00	5,302.22	9,346.59	5,100.82	105.09	86.34	-80.18	-3,768.36	-1,971.62	1,483.26	1,296.97	186.28	7.962		
10,400.00	5,299.90	9,346.59	5,100.82	107.04	86.34	-80.18	-3,768.36	-1,971.62	1,540.94	1,352.70	188.24	8.186		
10,481.67	5,298.00	9,346.59	5,100.82	108.63	86.34	-80.18	-3,768.36	-1,971.62	1,591.17	1,401.33	189.84	8.381		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Company:	SHELL E&P	Local Co-ordinate Reference:	Well NORTH CASTOR GULCH 2-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	KB @ 7008.00ft (SAVANA 650)
Reference Site:	NORTH CASTOR GULCH 2-16	MD Reference:	KB @ 7008.00ft (SAVANA 650)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	NORTH CASTOR GULCH 2-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	NORTH CASTOR GULCH 2-16	Database:	EDM 5000.1 Single User Db
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design		North Castor Gulch 1-16 - North Castor Gulch 1-16 - North Castor Gulch 1-16 Pilot Hole - Design #5											Offset Site Error: 0.67 ft	
Survey Program: 0-MWD, 4800-													Offset Well Error: 0.00 ft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
0.00	0.00	0.00	0.00	0.00	0.67	79.00	16.23	83.47	85.63					
100.00	100.00	89.90	89.90	0.09	0.67	79.00	16.23	83.47	85.03	84.27	0.77	110.869		
200.00	200.00	189.90	189.90	0.32	0.73	79.00	16.23	83.47	85.03	83.98	1.05	80.937		
300.00	300.00	289.90	289.90	0.54	0.85	79.00	16.23	83.47	85.03	83.64	1.39	61.046		
400.00	400.00	389.90	389.90	0.77	1.00	79.00	16.23	83.47	85.03	83.26	1.77	47.973		
500.00	500.00	489.90	489.90	0.99	1.18	79.00	16.23	83.47	85.03	82.86	2.17	39.099		
600.00	600.00	589.90	589.90	1.22	1.37	79.00	16.23	83.47	85.03	82.44	2.59	32.819		
700.00	700.00	689.90	689.90	1.44	1.57	79.00	16.23	83.47	85.03	82.02	3.02	28.194		
800.00	800.00	789.90	789.90	1.67	1.78	79.00	16.23	83.47	85.03	81.59	3.45	24.669		
900.00	900.00	889.90	889.90	1.89	1.99	79.00	16.23	83.47	85.03	81.15	3.88	21.905		
1,000.00	1,000.00	989.90	989.90	2.12	2.20	79.00	16.23	83.47	85.03	80.71	4.32	19.685		
1,100.00	1,100.00	1,089.90	1,089.90	2.34	2.42	79.00	16.23	83.47	85.03	80.27	4.76	17.865		
1,200.00	1,200.00	1,189.90	1,189.90	2.57	2.63	79.00	16.23	83.47	85.03	79.83	5.20	16.349		
1,300.00	1,300.00	1,289.90	1,289.90	2.79	2.85	79.00	16.23	83.47	85.03	79.39	5.64	15.066		
1,400.00	1,400.00	1,389.90	1,389.90	3.02	3.07	79.00	16.23	83.47	85.03	78.95	6.09	13.968		
1,500.00	1,500.00	1,489.90	1,489.90	3.24	3.29	79.00	16.23	83.47	85.03	78.50	6.53	13.017		
1,600.00	1,600.00	1,589.90	1,589.90	3.47	3.51	79.00	16.23	83.47	85.03	78.06	6.98	12.187		
1,700.00	1,700.00	1,689.90	1,689.90	3.69	3.73	79.00	16.23	83.47	85.03	77.61	7.42	11.455		
1,800.00	1,800.00	1,789.90	1,789.90	3.92	3.95	79.00	16.23	83.47	85.03	77.16	7.87	10.806		
1,900.00	1,900.00	1,889.90	1,889.90	4.14	4.18	79.00	16.23	83.47	85.03	76.72	8.32	10.226		
2,000.00	2,000.00	1,989.90	1,989.90	4.36	4.40	79.00	16.23	83.47	85.03	76.27	8.76	9.704 CC, ES		
2,100.00	2,099.98	2,089.88	2,089.88	4.58	4.62	143.82	16.23	83.47	86.44	77.24	9.20	9.397 SF		
2,200.00	2,199.84	2,189.74	2,189.74	4.80	4.84	145.73	16.23	83.47	90.71	81.09	9.62	9.429		
2,300.00	2,299.45	2,289.35	2,289.35	5.02	5.06	148.51	16.23	83.47	98.04	88.01	10.04	9.769		
2,400.00	2,398.70	2,388.60	2,388.60	5.25	5.29	151.77	16.23	83.47	108.64	98.20	10.44	10.404		
2,500.00	2,497.47	2,487.37	2,487.37	5.50	5.51	155.10	16.23	83.47	122.67	111.83	10.84	11.321		
2,600.00	2,595.62	2,585.52	2,585.52	5.78	5.72	158.24	16.23	83.47	140.25	129.03	11.22	12.502		
2,700.00	2,693.06	2,682.96	2,682.96	6.09	5.94	161.06	16.23	83.47	161.41	149.82	11.59	13.929		
2,800.00	2,789.64	2,779.54	2,779.54	6.45	6.16	163.49	16.23	83.47	186.14	174.20	11.95	15.583		
2,900.00	2,885.27	2,875.17	2,875.17	6.86	6.37	165.56	16.23	83.47	214.41	202.12	12.29	17.444		
3,000.00	2,979.82	2,969.72	2,969.72	7.33	6.58	167.30	16.23	83.47	246.15	233.52	12.63	19.496		
3,100.00	3,073.17	3,063.07	3,063.07	7.87	6.79	168.76	16.23	83.47	281.30	268.34	12.96	21.706		
3,200.00	3,165.98	3,155.88	3,155.88	8.46	7.00	170.07	16.23	83.47	317.99	304.58	13.41	23.709		
3,300.00	3,258.79	3,248.69	3,248.69	9.09	7.21	171.10	16.23	83.47	354.80	340.93	13.87	25.573		
3,400.00	3,351.59	3,341.49	3,341.49	9.73	7.41	171.95	16.23	83.47	391.69	377.35	14.34	27.309		
3,500.00	3,444.40	3,434.30	3,434.30	10.40	7.62	172.64	16.23	83.47	428.64	413.83	14.82	28.927		
3,600.00	3,537.21	3,527.11	3,527.11	11.08	7.83	173.23	16.23	83.47	465.64	450.34	15.30	30.436		
3,700.00	3,630.01	3,619.91	3,619.91	11.78	8.04	173.73	16.23	83.47	502.67	486.89	15.78	31.845		
3,800.00	3,722.82	3,712.72	3,712.72	12.49	8.25	174.16	16.23	83.47	539.74	523.46	16.27	33.164		
3,900.00	3,815.63	3,805.53	3,805.53	13.21	8.45	174.54	16.23	83.47	576.82	560.05	16.77	34.398		
4,000.00	3,908.43	3,898.33	3,898.33	13.93	8.66	174.87	16.23	83.47	613.93	596.66	17.27	35.555		
4,100.00	4,001.24	3,991.14	3,991.14	14.67	8.87	175.16	16.23	83.47	651.04	633.28	17.77	36.642		
4,200.00	4,094.05	4,083.95	4,083.95	15.41	9.08	175.42	16.23	83.47	688.18	669.91	18.27	37.664		
4,300.00	4,186.85	4,176.75	4,176.75	16.15	9.29	175.66	16.23	83.47	725.32	706.54	18.78	38.625		
4,400.00	4,279.66	4,269.56	4,269.56	16.90	9.49	175.87	16.23	83.47	762.47	743.19	19.29	39.532		
4,500.00	4,372.47	4,362.37	4,362.37	17.65	9.70	176.06	16.23	83.47	799.64	779.84	19.80	40.388		
4,600.00	4,465.28	4,455.18	4,455.18	18.41	9.91	176.24	16.23	83.47	836.80	816.49	20.31	41.197		
4,700.00	4,558.08	4,550.46	4,550.46	19.16	10.12	176.42	15.96	83.32	873.95	853.12	20.83	41.964		
4,800.00	4,650.89	4,653.76	4,653.30	19.93	10.30	177.18	8.11	79.05	910.34	889.03	21.30	42.736		
4,900.00	4,743.40	4,755.22	4,752.58	20.64	10.48	-163.50	-10.02	69.17	946.30	924.54	21.76	43.485		
5,000.00	4,834.37	4,850.71	4,843.79	21.36	10.67	-146.26	-34.82	55.67	982.21	959.76	22.44	43.764		
5,100.00	4,922.46	4,942.47	4,931.68	22.10	10.91	-133.39	-57.99	43.05	1,017.98	994.67	23.31	43.671		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Company:	SHELL E&P	Local Co-ordinate Reference:	Well NORTH CASTOR GULCH 2-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	KB @ 7008.00ft (SAVANA 650)
Reference Site:	NORTH CASTOR GULCH 2-16	MD Reference:	KB @ 7008.00ft (SAVANA 650)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	NORTH CASTOR GULCH 2-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	NORTH CASTOR GULCH 2-16	Database:	EDM 5000.1 Single User Db
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design		North Castor Gulch 1-16 - North Castor Gulch 1-16 - North Castor Gulch 1-16 Pilot Hole - Design #5											Offset Site Error:	0.67 ft
Survey Program:		0-MWD, 4800-											Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
5,200.00	5,006.34	5,032.84	5,018.79	22.85	11.17	-124.24	-79.10	31.55	1,053.27	1,028.98	24.29	43.361		
5,300.00	5,084.76	5,119.64	5,102.94	23.62	11.43	-117.84	-97.77	21.39	1,088.15	1,062.82	25.33	42.962		
5,400.00	5,156.56	5,200.00	5,181.25	24.43	11.68	-113.31	-113.63	12.76	1,123.08	1,096.66	26.42	42.508		
5,500.00	5,220.67	5,274.88	5,254.53	25.27	11.91	-110.04	-127.17	5.38	1,158.76	1,131.18	27.58	42.010		
5,600.00	5,276.13	5,340.29	5,318.75	26.16	12.11	-107.43	-138.03	-0.53	1,195.96	1,167.12	28.84	41.465		
5,700.00	5,322.11	5,400.00	5,377.56	27.10	12.29	-105.25	-147.14	-5.49	1,235.39	1,205.19	30.20	40.910		
5,800.00	5,357.92	5,441.72	5,418.73	28.09	12.41	-102.72	-153.05	-8.71	1,277.51	1,245.86	31.65	40.361		
5,900.00	5,383.05	5,476.83	5,453.43	29.12	12.52	-100.10	-157.74	-11.27	1,322.58	1,289.47	33.11	39.950		
6,000.00	5,397.10	5,500.00	5,476.36	30.19	12.59	-97.07	-160.69	-12.87	1,370.49	1,336.05	34.44	39.788		
6,100.00	5,399.88	5,515.72	5,491.92	31.27	12.63	-94.01	-162.62	-13.93	1,420.89	1,385.33	35.55	39.965		
6,200.00	5,397.56	5,525.26	5,501.37	32.43	12.66	-94.45	-163.77	-14.55	1,474.94	1,437.74	37.20	39.650		
6,300.00	5,395.23	5,534.41	5,510.44	33.67	12.69	-94.88	-164.86	-15.14	1,533.55	1,494.65	38.89	39.428		
6,400.00	5,392.91	5,543.21	5,519.16	34.98	12.71	-95.29	-165.88	-15.70	1,596.21	1,555.58	40.63	39.287		



Weatherford International Ltd.

Anticollision Report



Company:	SHELL E&P	Local Co-ordinate Reference:	Well NORTH CASTOR GULCH 2-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	KB @ 7008.00ft (SAVANA 650)
Reference Site:	NORTH CASTOR GULCH 2-16	MD Reference:	KB @ 7008.00ft (SAVANA 650)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	NORTH CASTOR GULCH 2-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	NORTH CASTOR GULCH 2-16	Database:	EDM 5000.1 Single User Db
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design NORTH CASTOR GULCH 3-16 - NORTH CASTOR GULCH 3-16 - NORTH CASTOR GULCH 3-16 - PL													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	150.17	-16.19	9.28	18.66					
100.00	100.00	100.00	100.00	0.09	0.09	150.17	-16.19	9.28	18.66	18.48	0.19	98.855		
200.00	200.00	200.00	200.00	0.32	0.32	150.17	-16.19	9.28	18.66	18.03	0.64	29.239		
300.00	300.00	300.00	300.00	0.54	0.54	150.17	-16.19	9.28	18.66	17.58	1.09	17.157		
400.00	400.00	400.00	400.00	0.77	0.77	150.17	-16.19	9.28	18.66	17.13	1.54	12.140		
500.00	500.00	500.00	500.00	0.99	0.99	150.17	-16.19	9.28	18.66	16.68	1.99	9.394		
600.00	600.00	600.00	600.00	1.22	1.22	150.17	-16.19	9.28	18.66	16.23	2.44	7.660		
700.00	700.00	700.00	700.00	1.44	1.44	150.17	-16.19	9.28	18.66	15.78	2.89	6.467		
800.00	800.00	800.00	800.00	1.67	1.67	150.17	-16.19	9.28	18.66	15.33	3.34	5.596		
900.00	900.00	900.00	900.00	1.89	1.89	150.17	-16.19	9.28	18.66	14.88	3.79	4.931		
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	150.17	-16.19	9.28	18.66	14.43	4.23	4.408		
1,100.00	1,100.00	1,100.00	1,100.00	2.34	2.34	150.17	-16.19	9.28	18.66	13.98	4.68	3.985		
1,200.00	1,200.00	1,200.00	1,200.00	2.57	2.57	150.17	-16.19	9.28	18.66	13.53	5.13	3.636		
1,300.00	1,300.00	1,300.00	1,300.00	2.79	2.79	150.17	-16.19	9.28	18.66	13.08	5.58	3.343		
1,400.00	1,400.00	1,400.00	1,400.00	3.02	3.02	150.17	-16.19	9.28	18.66	12.63	6.03	3.094		
1,500.00	1,500.00	1,500.00	1,500.00	3.24	3.24	150.17	-16.19	9.28	18.66	12.18	6.48	2.879		
1,600.00	1,600.00	1,600.00	1,600.00	3.47	3.47	150.17	-16.19	9.28	18.66	11.73	6.93	2.693		
1,700.00	1,700.00	1,700.00	1,700.00	3.69	3.69	150.17	-16.19	9.28	18.66	11.28	7.38	2.529		
1,800.00	1,800.00	1,800.00	1,800.00	3.92	3.92	150.17	-16.19	9.28	18.66	10.83	7.83	2.383		
1,900.00	1,900.00	1,900.00	1,900.00	4.14	4.14	150.17	-16.19	9.28	18.66	10.38	8.28	2.254		
2,000.00	2,000.00	2,000.00	2,000.00	4.36	4.36	150.17	-16.19	9.28	18.66	9.93	8.73	2.138 CC, ES, SF		
2,100.00	2,099.98	2,099.37	2,099.35	4.58	4.57	-151.13	-16.82	10.89	21.56	12.41	9.15	2.356		
2,200.00	2,199.84	2,198.03	2,197.87	4.80	4.76	-160.99	-18.69	15.65	30.94	21.40	9.54	3.244		
2,300.00	2,299.45	2,295.28	2,294.76	5.02	4.96	-168.39	-21.74	23.44	47.44	37.52	9.92	4.783		
2,400.00	2,398.70	2,390.46	2,389.25	5.25	5.16	-172.88	-25.90	34.02	70.93	60.64	10.29	6.895		
2,500.00	2,497.47	2,482.97	2,480.69	5.50	5.38	-175.55	-31.03	47.09	101.11	90.46	10.64	9.499		
2,600.00	2,595.62	2,572.30	2,568.50	5.78	5.61	-177.22	-37.00	62.32	137.66	126.67	10.99	12.529		
2,700.00	2,693.06	2,657.99	2,652.22	6.09	5.86	-178.32	-43.67	79.32	180.27	168.95	11.31	15.932		
2,800.00	2,789.64	2,739.69	2,731.50	6.45	6.13	-179.07	-50.88	97.69	228.61	216.99	11.62	19.667		
2,900.00	2,885.27	2,817.11	2,806.07	6.86	6.41	-179.61	-58.47	117.03	282.36	270.44	11.92	23.684		
3,000.00	2,979.82	2,890.05	2,875.80	7.33	6.71	179.99	-66.29	136.96	341.17	328.97	12.20	27.967		
3,100.00	3,073.17	2,958.39	2,940.61	7.87	7.03	179.68	-74.21	157.13	404.69	392.22	12.47	32.451		
3,200.00	3,165.98	3,028.22	3,006.36	8.46	7.37	179.42	-82.80	179.03	470.94	458.07	12.87	36.587		
3,300.00	3,258.79	3,102.90	3,076.60	9.09	7.77	179.21	-92.06	202.64	537.43	524.16	13.27	40.485		
3,400.00	3,351.59	3,177.58	3,146.84	9.73	8.18	179.05	-101.33	226.25	603.93	590.24	13.69	44.110		
3,500.00	3,444.40	3,252.25	3,217.08	10.40	8.61	178.92	-110.60	249.86	670.43	656.31	14.12	47.497		
3,600.00	3,537.21	3,326.93	3,287.32	11.08	9.05	178.82	-119.86	273.48	736.93	722.38	14.55	50.663		
3,700.00	3,630.01	3,401.61	3,357.55	11.78	9.49	178.73	-129.13	297.09	803.43	788.45	14.98	53.624		
3,800.00	3,722.82	3,476.29	3,427.79	12.49	9.95	178.65	-138.39	320.70	869.93	854.50	15.43	56.386		
3,900.00	3,815.63	3,550.97	3,498.03	13.21	10.42	178.59	-147.66	344.31	936.43	920.55	15.88	58.973		
4,000.00	3,908.43	3,625.65	3,568.27	13.93	10.90	178.53	-156.92	367.92	1,002.94	986.60	16.33	61.400		
4,100.00	4,001.24	3,700.32	3,638.51	14.67	11.38	178.48	-166.19	391.54	1,069.44	1,052.65	16.79	63.679		
4,200.00	4,094.05	3,775.00	3,708.75	15.41	11.86	178.44	-175.45	415.15	1,135.94	1,118.68	17.26	65.812		
4,300.00	4,186.85	3,849.68	3,778.99	16.15	12.35	178.40	-184.72	438.76	1,202.45	1,184.72	17.73	67.819		
4,400.00	4,279.66	3,924.36	3,849.22	16.90	12.85	178.37	-193.99	462.37	1,268.95	1,250.75	18.20	69.710		
4,500.00	4,372.47	3,999.04	3,919.46	17.65	13.35	178.33	-203.25	485.98	1,335.46	1,316.78	18.68	71.491		
4,600.00	4,465.28	4,073.71	3,989.70	18.41	13.85	178.31	-212.52	509.59	1,401.96	1,382.80	19.16	73.167		
4,700.00	4,558.08	4,148.39	4,059.94	19.16	14.36	178.28	-221.78	533.21	1,468.47	1,448.82	19.64	74.751		
4,800.00	4,650.89	4,223.07	4,130.18	19.93	14.86	178.26	-231.05	556.82	1,534.97	1,514.84	20.13	76.248		
4,900.00	4,743.40	4,297.27	4,199.96	20.64	15.37	-160.42	-240.25	580.28	1,601.68	1,580.83	20.86	76.800		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Weatherford International Ltd.

Anticollision Report



Company:	SHELL E&P	Local Co-ordinate Reference:	Well NORTH CASTOR GULCH 2-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	KB @ 7008.00ft (SAVANA 650)
Reference Site:	NORTH CASTOR GULCH 2-16	MD Reference:	KB @ 7008.00ft (SAVANA 650)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	NORTH CASTOR GULCH 2-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	NORTH CASTOR GULCH 2-16	Database:	EDM 5000.1 Single User Db
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design NORTH CASTOR GULCH 4-16 - NORTH CASTOR GULCH 4-16 - NORTH CASTOR GULCH 4-16 - PL													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-29.28	15.18	-8.51	17.40					
100.00	100.00	100.00	100.00	0.09	0.09	-29.28	15.18	-8.51	17.40	17.21	0.19	92.172		
200.00	200.00	200.00	200.00	0.32	0.32	-29.28	15.18	-8.51	17.40	16.76	0.64	27.262		
300.00	300.00	300.00	300.00	0.54	0.54	-29.28	15.18	-8.51	17.40	16.31	1.09	15.997		
400.00	400.00	400.00	400.00	0.77	0.77	-29.28	15.18	-8.51	17.40	15.86	1.54	11.319		
500.00	500.00	500.00	500.00	0.99	0.99	-29.28	15.18	-8.51	17.40	15.42	1.99	8.758		
600.00	600.00	600.00	600.00	1.22	1.22	-29.28	15.18	-8.51	17.40	14.97	2.44	7.142		
700.00	700.00	700.00	700.00	1.44	1.44	-29.28	15.18	-8.51	17.40	14.52	2.89	6.030		
800.00	800.00	800.00	800.00	1.67	1.67	-29.28	15.18	-8.51	17.40	14.07	3.34	5.217		
900.00	900.00	900.00	900.00	1.89	1.89	-29.28	15.18	-8.51	17.40	13.62	3.79	4.598		
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	-29.28	15.18	-8.51	17.40	13.17	4.23	4.110		
1,100.00	1,100.00	1,100.00	1,100.00	2.34	2.34	-29.28	15.18	-8.51	17.40	12.72	4.68	3.715		
1,200.00	1,200.00	1,200.00	1,200.00	2.57	2.57	-29.28	15.18	-8.51	17.40	12.27	5.13	3.390		
1,300.00	1,300.00	1,300.00	1,300.00	2.79	2.79	-29.28	15.18	-8.51	17.40	11.82	5.58	3.117		
1,400.00	1,400.00	1,400.00	1,400.00	3.02	3.02	-29.28	15.18	-8.51	17.40	11.37	6.03	2.885		
1,500.00	1,500.00	1,500.00	1,500.00	3.24	3.24	-29.28	15.18	-8.51	17.40	10.92	6.48	2.685		
1,600.00	1,600.00	1,600.00	1,600.00	3.47	3.47	-29.28	15.18	-8.51	17.40	10.47	6.93	2.511		
1,700.00	1,700.00	1,700.00	1,700.00	3.69	3.69	-29.28	15.18	-8.51	17.40	10.02	7.38	2.358		
1,800.00	1,800.00	1,800.00	1,800.00	3.92	3.92	-29.28	15.18	-8.51	17.40	9.57	7.83	2.222		
1,900.00	1,900.00	1,900.00	1,900.00	4.14	4.14	-29.28	15.18	-8.51	17.40	9.12	8.28	2.102 CC, ES, SF		
2,000.00	2,000.00	1,999.58	1,999.56	4.36	4.35	-33.45	15.46	-10.22	18.54	8.82	8.72	2.127		
2,100.00	2,099.98	2,099.02	2,098.86	4.58	4.56	22.64	16.32	-15.33	20.80	11.66	9.13	2.277		
2,200.00	2,199.84	2,198.32	2,197.78	4.80	4.77	14.06	17.74	-23.82	22.97	13.44	9.54	2.409		
2,300.00	2,299.45	2,297.46	2,296.19	5.02	5.00	4.99	19.72	-35.66	25.31	15.38	9.93	2.549		
2,400.00	2,398.70	2,396.45	2,393.97	5.25	5.25	-4.35	22.26	-50.83	28.06	17.74	10.31	2.720		
2,500.00	2,497.47	2,495.26	2,490.98	5.50	5.52	-13.61	25.35	-69.29	31.46	20.76	10.70	2.941		
2,600.00	2,595.62	2,593.88	2,587.11	5.78	5.84	-22.39	28.98	-90.99	35.72	24.61	11.10	3.217		
2,700.00	2,693.06	2,692.30	2,682.24	6.09	6.19	-30.41	33.15	-115.88	40.95	29.39	11.57	3.541		
2,800.00	2,789.64	2,790.52	2,776.24	6.45	6.60	-37.52	37.84	-143.92	47.24	35.12	12.12	3.899		
2,900.00	2,885.27	2,888.52	2,869.02	6.86	7.07	-43.68	43.05	-175.06	54.59	41.80	12.79	4.268		
3,000.00	2,979.82	2,986.29	2,960.44	7.33	7.60	-48.97	48.77	-209.22	63.00	49.39	13.61	4.629		
3,100.00	3,073.17	3,083.83	3,050.42	7.87	8.21	-53.49	54.98	-246.34	72.44	57.85	14.59	4.965		
3,200.00	3,165.98	3,181.06	3,138.79	8.46	8.89	-56.40	61.67	-286.33	83.96	68.26	15.69	5.350		
3,300.00	3,258.79	3,277.77	3,225.27	9.09	9.64	-57.26	68.82	-329.02	98.09	81.31	16.78	5.844		
3,400.00	3,351.59	3,373.74	3,309.59	9.73	10.48	-56.79	76.38	-374.21	114.70	96.85	17.85	6.427		
3,500.00	3,444.40	3,468.76	3,391.53	10.40	11.39	-55.52	84.32	-421.67	133.78	114.91	18.87	7.089		
3,600.00	3,537.21	3,562.66	3,470.88	11.08	12.36	-53.82	92.61	-471.17	155.41	135.55	19.85	7.827		
3,700.00	3,630.01	3,655.24	3,547.47	11.78	13.41	-51.93	101.19	-522.46	179.66	158.87	20.80	8.638		
3,800.00	3,722.82	3,746.35	3,621.16	12.49	14.50	-50.01	110.03	-575.30	206.60	184.90	21.70	9.520		
3,900.00	3,815.63	3,840.86	3,696.41	13.21	15.71	-48.18	119.47	-631.70	235.41	212.80	22.61	10.411		
4,000.00	3,908.43	3,936.36	3,772.41	13.93	16.95	-46.72	129.01	-688.73	264.45	240.90	23.55	11.229		
4,100.00	4,001.24	4,031.86	3,848.42	14.67	18.20	-45.55	138.56	-745.75	293.61	269.10	24.51	11.978		
4,200.00	4,094.05	4,127.36	3,924.42	15.41	19.47	-44.60	148.10	-802.78	322.86	297.37	25.49	12.664		
4,300.00	4,186.85	4,222.86	4,000.43	16.15	20.75	-43.80	157.64	-859.81	352.18	325.69	26.49	13.294		
4,400.00	4,279.66	4,318.36	4,076.44	16.90	22.05	-43.12	167.19	-916.84	381.56	354.05	27.50	13.873		
4,500.00	4,372.47	4,413.86	4,152.44	17.65	23.34	-42.54	176.73	-973.86	410.97	382.44	28.53	14.406		
4,600.00	4,465.28	4,509.36	4,228.45	18.41	24.65	-42.04	186.28	-1,030.89	440.42	410.86	29.56	14.898		
4,700.00	4,558.08	4,604.85	4,304.45	19.16	25.96	-41.60	195.82	-1,087.92	469.90	439.29	30.60	15.354		
4,800.00	4,650.89	4,700.35	4,380.46	19.93	27.28	-41.22	205.36	-1,144.95	499.39	467.74	31.66	15.776		
4,900.00	4,743.40	4,796.64	4,457.09	20.64	28.61	-25.98	214.99	-1,202.45	525.28	492.37	32.91	15.960		
5,000.00	4,834.37	4,893.81	4,534.43	21.36	29.96	-11.44	224.70	-1,260.47	543.08	509.87	33.21	16.355		
5,100.00	4,922.46	4,990.40	4,611.30	22.10	31.30	0.75	234.35	-1,318.15	553.21	520.69	32.51	17.015		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Weatherford International Ltd.

Anticollision Report



Company:	SHELL E&P	Local Co-ordinate Reference:	Well NORTH CASTOR GULCH 2-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	KB @ 7008.00ft (SAVANA 650)
Reference Site:	NORTH CASTOR GULCH 2-16	MD Reference:	KB @ 7008.00ft (SAVANA 650)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	NORTH CASTOR GULCH 2-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	NORTH CASTOR GULCH 2-16	Database:	EDM 5000.1 Single User Db
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design		NORTH CASTOR GULCH 4-16 - NORTH CASTOR GULCH 4-16 - NORTH CASTOR GULCH 4-16 - PL											Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre	Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
5,200.00	5,006.34	5,084.99	4,686.58	22.85	32.61	11.14	243.80	-1,374.63	556.61	525.60	31.01	17.950		
5,300.00	5,084.76	5,176.15	4,759.14	23.62	33.89	20.43	252.91	-1,429.07	554.75	525.60	29.14	19.037		
5,400.00	5,156.56	5,262.54	4,827.89	24.43	35.09	29.11	261.54	-1,480.66	549.62	521.92	27.70	19.845		
5,500.00	5,220.67	5,342.86	4,891.82	25.27	36.22	37.31	269.57	-1,528.62	543.80	516.21	27.59	19.711		
5,600.00	5,276.13	5,415.91	4,949.96	26.16	37.24	44.89	276.87	-1,572.24	540.31	511.11	29.20	18.504		
5,620.79	5,286.49	5,430.09	4,961.24	26.34	37.44	46.36	278.29	-1,580.71	540.18	510.44	29.73	18.167		
5,700.00	5,322.11	5,480.62	5,001.45	27.10	38.14	51.49	283.34	-1,610.88	542.40	510.40	32.00	16.950		
5,800.00	5,357.92	5,528.84	5,039.35	28.09	38.82	55.95	287.15	-1,640.44	553.42	518.59	34.83	15.889		
5,900.00	5,383.05	5,576.08	5,075.42	29.12	39.50	59.29	288.81	-1,670.89	574.94	537.30	37.63	15.277		
6,000.00	5,397.10	5,622.41	5,109.67	30.19	40.20	61.46	288.46	-1,702.08	606.80	566.56	40.24	15.079		
6,100.00	5,399.88	5,667.65	5,141.93	31.27	40.90	62.60	286.22	-1,733.72	648.25	605.61	42.64	15.202		
6,200.00	5,397.56	5,719.26	5,177.15	32.43	41.73	67.07	281.39	-1,771.11	698.43	653.23	45.20	15.451		
6,300.00	5,395.23	5,787.37	5,220.88	33.67	42.86	72.39	271.31	-1,822.32	755.06	707.13	47.93	15.753		
6,400.00	5,392.91	5,879.84	5,274.70	34.98	44.45	78.47	251.04	-1,894.66	815.03	764.25	50.78	16.050		
6,500.00	5,390.58	6,008.36	5,337.74	36.36	46.72	84.78	210.73	-1,999.00	874.78	820.94	53.83	16.250		
6,600.00	5,388.26	6,187.55	5,400.21	37.79	49.91	90.07	132.78	-2,147.33	929.75	872.17	57.58	16.148		
6,700.00	5,385.93	6,424.98	5,433.06	39.28	53.96	92.45	-3.45	-2,337.96	974.15	911.27	62.87	15.494		
6,800.00	5,383.61	6,538.10	5,431.51	40.81	55.82	92.40	-77.17	-2,423.75	1,009.51	942.79	66.72	15.130		
6,900.00	5,381.28	6,631.68	5,429.83	42.39	57.42	92.34	-138.32	-2,494.56	1,044.76	974.45	70.32	14.858		
7,000.00	5,378.96	6,725.25	5,428.16	44.00	59.05	92.29	-199.47	-2,565.37	1,080.02	1,006.07	73.95	14.605		
7,100.00	5,376.63	6,818.82	5,426.48	45.64	60.72	92.24	-260.62	-2,636.17	1,115.28	1,037.66	77.62	14.368		
7,200.00	5,374.31	6,912.40	5,424.80	47.31	62.42	92.19	-321.77	-2,706.98	1,150.54	1,069.21	81.33	14.147		
7,300.00	5,371.98	7,005.97	5,423.12	49.00	64.14	92.14	-382.92	-2,777.79	1,185.80	1,100.74	85.06	13.941		
7,400.00	5,369.66	7,099.54	5,421.44	50.72	65.89	92.10	-444.07	-2,848.60	1,221.06	1,132.24	88.82	13.748		
7,500.00	5,367.33	7,193.12	5,419.76	52.46	67.66	92.05	-505.22	-2,919.41	1,256.32	1,163.72	92.60	13.567		
7,600.00	5,365.00	7,286.69	5,418.08	54.22	69.46	92.02	-566.37	-2,990.21	1,291.58	1,195.18	96.40	13.398		
7,700.00	5,362.68	7,380.27	5,416.40	56.00	71.28	91.98	-627.52	-3,061.02	1,326.84	1,226.62	100.22	13.239		
7,800.00	5,360.35	7,473.84	5,414.72	57.79	73.11	91.94	-688.67	-3,131.83	1,362.10	1,258.04	104.06	13.090		
7,900.00	5,358.03	7,567.41	5,413.05	59.59	74.97	91.91	-749.82	-3,202.64	1,397.36	1,289.46	107.91	12.950		
8,000.00	5,355.70	7,660.99	5,411.37	61.41	76.84	91.88	-810.98	-3,273.45	1,432.63	1,320.86	111.77	12.818		
8,100.00	5,353.38	7,754.56	5,409.69	63.24	78.72	91.85	-872.13	-3,344.25	1,467.89	1,352.25	115.64	12.693		
8,200.00	5,351.05	7,848.13	5,408.01	65.07	80.62	91.82	-933.28	-3,415.06	1,503.15	1,383.63	119.53	12.576		
8,300.00	5,348.73	7,941.71	5,406.33	66.92	82.53	91.79	-994.43	-3,485.87	1,538.42	1,415.00	123.42	12.465		
8,400.00	5,346.40	8,035.28	5,404.65	68.78	84.46	91.77	-1,055.58	-3,556.68	1,573.68	1,446.36	127.32	12.360		
8,500.00	5,344.08	8,128.85	5,402.97	70.64	86.39	91.74	-1,116.73	-3,627.49	1,608.95	1,477.71	131.23	12.260		



Weatherford International Ltd.

Anticollision Report



Company:	SHELL E&P	Local Co-ordinate Reference:	Well NORTH CASTOR GULCH 2-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	KB @ 7008.00ft (SAVANA 650)
Reference Site:	NORTH CASTOR GULCH 2-16	MD Reference:	KB @ 7008.00ft (SAVANA 650)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	NORTH CASTOR GULCH 2-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	NORTH CASTOR GULCH 2-16	Database:	EDM 5000.1 Single User Db
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design NORTH CASTOR GULCH 5-16 - NORTH CASTOR GULCH 5-16 - NORTH CASTOR GULCH 5-16 - PL													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-29.57	31.37	-17.80	36.07					
100.00	100.00	100.00	100.00	0.09	0.09	-29.57	31.37	-17.80	36.07	35.88	0.19	191.025		
200.00	200.00	200.00	200.00	0.32	0.32	-29.57	31.37	-17.80	36.07	35.43	0.64	56.500		
300.00	300.00	300.00	300.00	0.54	0.54	-29.57	31.37	-17.80	36.07	34.98	1.09	33.153		
400.00	400.00	400.00	400.00	0.77	0.77	-29.57	31.37	-17.80	36.07	34.53	1.54	23.459		
500.00	500.00	500.00	500.00	0.99	0.99	-29.57	31.37	-17.80	36.07	34.08	1.99	18.152		
600.00	600.00	600.00	600.00	1.22	1.22	-29.57	31.37	-17.80	36.07	33.63	2.44	14.803		
700.00	700.00	700.00	700.00	1.44	1.44	-29.57	31.37	-17.80	36.07	33.18	2.89	12.497		
800.00	800.00	800.00	800.00	1.67	1.67	-29.57	31.37	-17.80	36.07	32.73	3.34	10.813		
900.00	900.00	900.00	900.00	1.89	1.89	-29.57	31.37	-17.80	36.07	32.28	3.79	9.529		
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	-29.57	31.37	-17.80	36.07	31.83	4.23	8.517		
1,100.00	1,100.00	1,100.00	1,100.00	2.34	2.34	-29.57	31.37	-17.80	36.07	31.38	4.68	7.700		
1,200.00	1,200.00	1,200.00	1,200.00	2.57	2.57	-29.57	31.37	-17.80	36.07	30.93	5.13	7.025		
1,300.00	1,300.00	1,300.00	1,300.00	2.79	2.79	-29.57	31.37	-17.80	36.07	30.48	5.58	6.460		
1,400.00	1,400.00	1,400.00	1,400.00	3.02	3.02	-29.57	31.37	-17.80	36.07	30.03	6.03	5.978		
1,500.00	1,500.00	1,500.00	1,500.00	3.24	3.24	-29.57	31.37	-17.80	36.07	29.58	6.48	5.564		
1,600.00	1,600.00	1,600.00	1,600.00	3.47	3.47	-29.57	31.37	-17.80	36.07	29.13	6.93	5.203		
1,700.00	1,700.00	1,700.00	1,700.00	3.69	3.69	-29.57	31.37	-17.80	36.07	28.68	7.38	4.886		
1,800.00	1,800.00	1,800.00	1,800.00	3.92	3.92	-29.57	31.37	-17.80	36.07	28.24	7.83	4.606		
1,900.00	1,900.00	1,900.00	1,900.00	4.14	4.14	-29.57	31.37	-17.80	36.07	27.79	8.28	4.356		
1,933.37	1,933.37	1,933.37	1,933.37	4.22	4.22	-29.57	31.37	-17.80	36.07	27.64	8.43	4.278 CC, ES		
2,000.00	2,000.00	1,999.40	1,999.40	4.36	4.36	-29.78	31.66	-18.11	36.48	27.75	8.73	4.180 SF		
2,100.00	2,099.98	2,098.16	2,098.10	4.58	4.58	34.23	33.94	-20.63	38.31	29.16	9.15	4.185		
2,200.00	2,199.84	2,196.85	2,196.54	4.80	4.80	35.35	38.50	-25.67	40.55	30.98	9.57	4.236		
2,300.00	2,299.45	2,295.44	2,294.61	5.02	5.02	37.51	45.33	-33.21	43.24	33.24	9.99	4.326		
2,400.00	2,398.70	2,393.94	2,392.17	5.25	5.26	40.45	54.42	-43.24	46.45	36.03	10.43	4.456		
2,500.00	2,497.47	2,492.33	2,489.10	5.50	5.52	43.91	65.73	-55.73	50.30	39.42	10.88	4.623		
2,600.00	2,595.62	2,590.60	2,585.28	5.78	5.81	47.66	79.25	-70.66	54.88	43.50	11.38	4.824		
2,700.00	2,693.06	2,688.74	2,680.58	6.09	6.13	51.49	94.96	-88.00	60.28	48.34	11.93	5.051		
2,800.00	2,789.64	2,786.73	2,774.89	6.45	6.50	55.24	112.82	-107.72	66.56	53.99	12.57	5.294		
2,900.00	2,885.27	2,884.58	2,868.09	6.86	6.91	58.80	132.80	-129.78	73.79	60.47	13.32	5.540		
3,000.00	2,979.82	2,982.26	2,960.07	7.33	7.39	62.09	154.87	-154.15	81.97	67.78	14.19	5.777		
3,100.00	3,073.17	3,079.89	3,050.83	7.87	7.93	65.10	179.02	-180.81	91.12	75.92	15.20	5.996		
3,200.00	3,165.98	3,179.31	3,142.69	8.46	8.53	67.85	204.54	-208.99	100.84	84.50	16.35	6.169		
3,300.00	3,258.79	3,278.73	3,234.55	9.09	9.16	70.11	230.06	-237.17	110.76	93.20	17.56	6.307		
3,400.00	3,351.59	3,378.15	3,326.42	9.73	9.81	72.00	255.58	-265.34	120.82	101.98	18.83	6.416		
3,500.00	3,444.40	3,477.57	3,418.28	10.40	10.48	73.60	281.10	-293.52	130.98	110.84	20.14	6.502		
3,600.00	3,537.21	3,576.99	3,510.15	11.08	11.17	74.97	306.63	-321.70	141.24	119.74	21.49	6.571		
3,700.00	3,630.01	3,676.41	3,602.01	11.78	11.87	76.15	332.15	-349.88	151.56	128.69	22.87	6.627		
3,800.00	3,722.82	3,775.83	3,693.88	12.49	12.59	77.18	357.67	-378.06	161.94	137.66	24.27	6.672		
3,900.00	3,815.63	3,875.25	3,785.74	13.21	13.31	78.08	383.19	-406.24	172.36	146.67	25.69	6.708		
4,000.00	3,908.43	3,974.67	3,877.60	13.93	14.04	78.89	408.72	-434.42	182.82	155.69	27.13	6.738		
4,100.00	4,001.24	4,074.10	3,969.47	14.67	14.78	79.60	434.24	-462.59	193.32	164.73	28.58	6.763		
4,200.00	4,094.05	4,173.52	4,061.33	15.41	15.52	80.24	459.76	-490.77	203.84	173.79	30.05	6.783		
4,300.00	4,186.85	4,272.94	4,153.20	16.15	16.27	80.82	485.28	-518.95	214.38	182.85	31.52	6.800		
4,400.00	4,279.66	4,372.36	4,245.06	16.90	17.02	81.35	510.80	-547.13	224.94	191.93	33.01	6.815		
4,500.00	4,372.47	4,471.78	4,336.93	17.65	17.78	81.82	536.33	-575.31	235.52	201.02	34.50	6.827		
4,600.00	4,465.28	4,571.20	4,428.79	18.41	18.53	82.26	561.85	-603.49	246.11	210.12	36.00	6.837		
4,700.00	4,558.08	4,670.62	4,520.65	19.16	19.30	82.66	587.37	-631.66	256.72	219.22	37.50	6.845		
4,800.00	4,650.89	4,770.04	4,612.52	19.93	20.06	83.03	612.89	-659.84	267.34	228.33	39.01	6.853		
4,900.00	4,743.40	4,868.67	4,703.65	20.64	20.82	99.08	638.21	-687.80	283.25	243.20	40.05	7.072		
5,000.00	4,834.37	4,964.61	4,792.30	21.36	21.56	113.40	662.84	-714.99	310.93	270.43	40.49	7.678		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Company:	SHELL E&P	Local Co-ordinate Reference:	Well NORTH CASTOR GULCH 2-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	KB @ 7008.00ft (SAVANA 650)
Reference Site:	NORTH CASTOR GULCH 2-16	MD Reference:	KB @ 7008.00ft (SAVANA 650)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	NORTH CASTOR GULCH 2-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	NORTH CASTOR GULCH 2-16	Database:	EDM 5000.1 Single User Db
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design NORTH CASTOR GULCH 5-16 - NORTH CASTOR GULCH 5-16 - NORTH CASTOR GULCH 5-16 - PL												Offset Site Error:	0.00 ft
Survey Program: 0-MWD												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.00	4,922.46	5,056.42	4,877.14	22.10	22.28	124.27	686.41	-741.01	350.03	309.71	40.31	8.682	
5,200.00	5,006.34	5,142.74	4,956.90	22.85	22.95	132.19	708.57	-765.48	400.02	360.54	39.48	10.131	
5,300.00	5,084.76	5,222.28	5,030.39	23.62	23.56	137.88	728.99	-788.02	460.19	422.19	38.00	12.110	
5,400.00	5,156.56	5,293.85	5,096.52	24.43	24.12	141.91	747.36	-808.31	529.64	493.73	35.91	14.750	
5,500.00	5,220.67	5,355.74	5,153.71	25.27	24.60	144.61	763.25	-825.85	607.33	574.06	33.27	18.252	
5,600.00	5,276.13	5,384.60	5,180.30	26.16	24.82	145.61	771.12	-833.82	693.04	662.83	30.21	22.941	
5,700.00	5,322.11	5,400.00	5,194.42	27.10	24.94	144.57	775.69	-837.91	785.53	758.31	27.21	28.865	
5,800.00	5,357.92	5,416.29	5,209.31	28.09	25.07	139.73	780.81	-842.10	882.35	856.97	25.38	34.760	
5,900.00	5,383.05	5,421.48	5,214.04	29.12	25.11	111.20	782.50	-843.41	981.55	949.90	31.65	31.009	
6,000.00	5,397.10	5,420.86	5,213.48	30.19	25.10	8.50	782.30	-843.26	1,081.37	1,063.58	17.79	60.788	
6,100.00	5,399.88	5,415.32	5,208.42	31.27	25.06	-9.43	780.50	-841.86	1,180.34	1,166.46	13.88	85.037	
6,200.00	5,397.56	5,400.00	5,194.42	32.43	24.94	-10.26	775.69	-837.91	1,278.72	1,264.23	14.49	88.271	
6,300.00	5,395.23	5,400.00	5,194.42	33.67	24.94	-10.26	775.69	-837.91	1,377.12	1,361.95	15.17	90.787	
6,400.00	5,392.91	5,400.00	5,194.42	34.98	24.94	-10.26	775.69	-837.91	1,475.74	1,459.87	15.87	92.997	
6,500.00	5,390.58	5,400.00	5,194.42	36.36	24.94	-10.26	775.69	-837.91	1,574.53	1,557.95	16.58	94.950	



Company:	SHELL E&P	Local Co-ordinate Reference:	Well NORTH CASTOR GULCH 2-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	KB @ 7008.00ft (SAVANA 650)
Reference Site:	NORTH CASTOR GULCH 2-16	MD Reference:	KB @ 7008.00ft (SAVANA 650)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	NORTH CASTOR GULCH 2-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	NORTH CASTOR GULCH 2-16	Database:	EDM 5000.1 Single User Db
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB @ 7008.00ft (SAVANA 650)

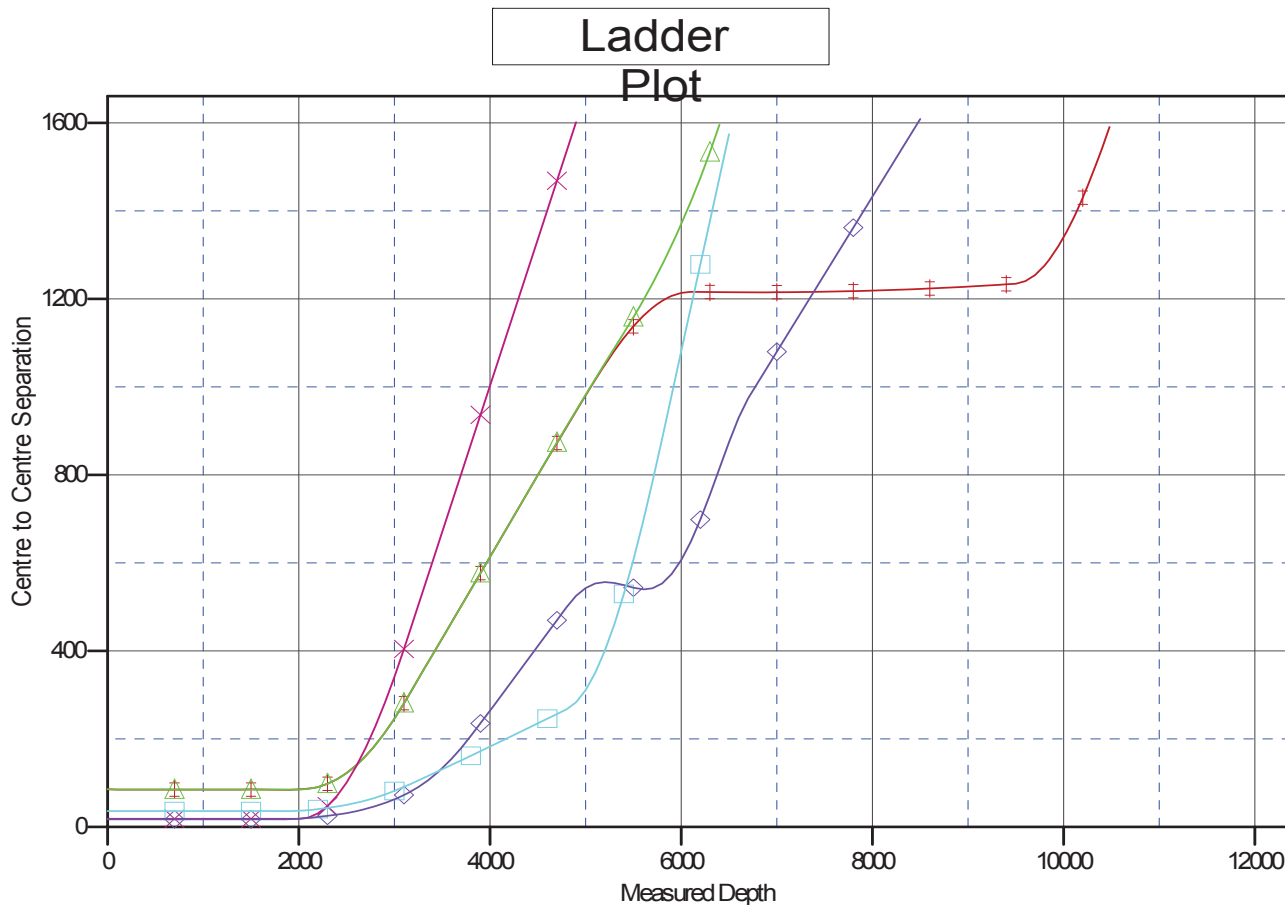
Offset Depths are relative to Offset Datum

Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: NORTH CASTOR GULCH 2-16

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: -1.36°



LEGEND

or Gulch 1-16, Design #10 V0

✕ NORTH CASTOR GULCH 3-16, NORTH CASTOR GULCH 3-16, PLAN#2 V0

□ NORTH CASTOR GULCH 5-16, NORTH CASTOR GULCH 5-16, PLAN#2 V0

or Gulch 1-16 Pilot Hole, Design #5 V0

◇ NORTH CASTOR GULCH 4-16, NORTH CASTOR GULCH 4-16, PLAN#2 V0



Company:	SHELL E&P	Local Co-ordinate Reference:	Well NORTH CASTOR GULCH 2-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	KB @ 7008.00ft (SAVANA 650)
Reference Site:	NORTH CASTOR GULCH 2-16	MD Reference:	KB @ 7008.00ft (SAVANA 650)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	NORTH CASTOR GULCH 2-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	NORTH CASTOR GULCH 2-16	Database:	EDM 5000.1 Single User Db
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB @ 7008.00ft (SAVANA 650)

Offset Depths are relative to Offset Datum

Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: NORTH CASTOR GULCH 2-16

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: -1.36°

